

## Formulation and comparative study of Anti-fungal activity of ointment containing Corn Silk extract

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### ABSTRACT:

*Stigma maydis* commonly known as Corn Silk belonging to family Poaceae or Gramineae, is a yellowish thread like strands obtained from female flower of maize, available in India. The known potential pharmacological activity of the *Stigma maydis* anti-fungal, anti-bacterial, anti-oxidant, anti-microbial, anti-hypertensive, melanin production inhibition, diuretic, anti-hyperglycemic, anti-fatigue, anti-depressant, anti-hyperlipidemic, anti-diabetic activity due to its rich content. It was allowed worthwhile to explore its operation in skin care. The objective of present study was preparing formulation from *Stigma maydis* to determine its anti-fungal potential against *Aspergillusniger* and to apply this anti-fungal potential in preparation of ointment. The inhibitory activity of *Stigma maydis* was investigated against *Aspergillusniger*. Our study focused on preparation of formulation that consists of anti-fungal activity.

**KEYWORDS:** Corn Silk, Anti-fungal activity, Fusion method

### I. INTRODUCTION

**Overview of Corn Silk** <sup>[6]</sup>:- Corn is also called maize, with its botanical name as *Zea mays* L. One of the agrarian by-products of corn is corn hair or commonly known as corn silk. Corn silk is the long, thread-like strands of plant material that grow underneath the husk of a fresh observance of corn. These cadescent, thin filaments prop the pollination and growth of corn, but they're also used in traditional herbal drug practices. It is a thread which is fine, unheroic color and soft with slightly sweetish taste. Corn silk is considered as a waste by-product of maize (corn). Maize being the third most planted food Crop and one of the major energy sources, it is also one of the essential cereal and edible grain the world Possesses. It contains carbohydrates, vitamins, and proteins, along with excellent source of volatile and fixed oils, steroids like sitosterol, stigmaterol, alkaloids, saponins and some natural antioxidants such as Flavonoids.

**Ointment** <sup>[1]</sup>:- An ointment is a homogeneous, thick, semi-solid medication, utmost generally slithery, thick oil (oil 80% - water 20%) with a high density which is intended for external operation to the skin or mucous membranes. Ointments have a water number that defines the maximum quantum of water that it can contain. They're used as emollients or for the operation of active constituents to the skin for defensive, remedial, or precautionary purposes and where a degree of occlusion is asked. There are various parts of the body surfaces, skin and mucous membranes where ointment is applied for curing certain skin or disease conditions. Ointment is applied on hands, legs, face, eyes, ears, vagina, anus, throat etc. There are various problems when an ointment is suggested for treatment such as Ointment for burns, Ointments for cuts, Ointments for pain, Ointments for itching, Ointments for inflammation and pain, Ointments for boils and scars, Ointments for skin problems like eczema, dermatitis and psoriasis.

**Fungal infection** <sup>[1]</sup>:- Fungal infection characterized by nodular lesions--first in the lungs and spreading to the nervous system. Candidiasis, monilia complaint, moniliasis. An infection caused by fungi of the rubric *Monilia* or *Candida* (especially *Candida albicans*). Fungi is able to survive in the air, soil, plants and water. There are also some fungi that live naturally in the mortal body. Like numerous microbes, there are helpful fungi and dangerous fungi. When dangerous fungi foray the body, they can be delicate to kill, as they can survive in the terrain and re-infect the person trying to get better. Various symptoms of a fungus infection relies on the kind, but usual indications include Skin changes such as red and conceivably cracking or shelling skin, itching. Tineapedis or athlete's bottom is a common fungal infection that affects the bottom. Athlete's bottom is generally associated with sports and athletes because the fungus grows impeccably in warm, wettish surroundings, similar as socks and shoes, sports outfit, and locker apartments. In actuality, anybody

may be infected by athlete's foot. It's most common in warmer climates and summer months, where it can snappily multiply.

## II. MATERIALS AND METHODS:

**Extraction of Corn Silk** <sup>[3]</sup>:- The extraction procedure used was aqueous extraction method. The procedure used for the extraction is as follows: For aqueous extraction, the dried powder was placed in distilled water and boiled on water bath for 6 hours. At intervals of 3 hours, the solvent was removed in vacuum. The supernatant was collected. After 6 hours, the supernatant was concentrated to make up the final volume. Finally, the concentrated extract was obtained.

**Ingredients used:-** Woolfat, Hard paraffin, Cetostearyl Alcohol, Yellow soft paraffin, Corn Silk extract.

### Formulation of ointment:-

#### Preparation of ointment by fusion method

Serial no.	Ingredients	Quantity Taken (10 gm)
1	Woolfat	0.5 gm
2	Hard paraffin	0.5 gm
3	Cetostearyl Alcohol	0.5 gm
4	Yellow soft paraffin	8.5 gm
5	Corn Silk extract	0.1 ml

Weigh all the constituents according to computation. Melt hard paraffin and cetostearyl alcohol in a demitasse dish, by keeping on a water bath. To this melted form, add wool fat along with white soft paraffin, stir effectively while melting. After completion of melting process all the constituents, take away the foreign matter if available by decanting or straining into another hot dish. Stir the admixture completely, until it becomes cooled and a circumfluous base is attained. Mix directly counted corn silk extract to the ointment base by levigation system to prepare a smooth paste with 2 or 3 times its weight of base, gradationally incorporating further bases until it form homogeneous ointment, eventually transferred in a suitable vessel.

## III. MARKETED FUNGAL PREPARATION

CLOTRIMAZOLE CREAM I.P. 1%, manufactured by KARNATAKA ANTIBIOTICS & PHARMACEUTICALS LIMITED, Peenya Industrial area, Bengaluru was taken as a standard formulation for comparative study of anti-fungal activity from reachable drug store.

### Ingredients present in this formulation:-

- Clotrimazole I.P.
- Preservative
- Benzyl alcohol I.P.
- Water miscible base

## IV. MICROBIAL EVALUATION<sup>[7]</sup>:

Microbial evaluation was carried out using cup plate method.

The procedure carried out for evaluation is as follows:

- Each petriplate was filled to a depth of 4-5 mm with a nutrient rose bengal agar medium that was preliminary inoculated with suitable inoculums of suitable test organism.
- After which, it was allowed to solidify.
- The petriplate was especially selected with flat bottom and was placed on position surface to insure that the subcaste of medium is in invariant consistence.
- The petriplates were sterilized at 160-170°C in a hot air oven for 30 mins before usage.
- Small sterile borer of invariant size was placed roughly at 10 cm height, having an internal periphery of roughly 6-8 mm and made of aluminium (or) stainless steel.
- One spherical depression was made in medium with the help of sterile borer.
- The depression was filled with the corn silk extract.
- The petriplates were incubated at 37°C for 72 hrs.
- Periphery of the zone of inhibition was measured.

## V. RESULT AND DISCUSSION:

### Anti-fungal activity:-

Sr. No.	Preparation	Zone of inhibition (r)	Zone of inhibition (area)
1	Corn Silk Extract	0.69 cm	1.49 cm <sup>2</sup>

2	Marketed preparation	0.7 cm	1.53 cm <sup>2</sup>
3	Ointment containing extract	0.68 cm	1.45 cm <sup>2</sup>



Fig 1: ZOI produced by Corn Silk extract



Fig 2: ZOI produced by Ointment formulation

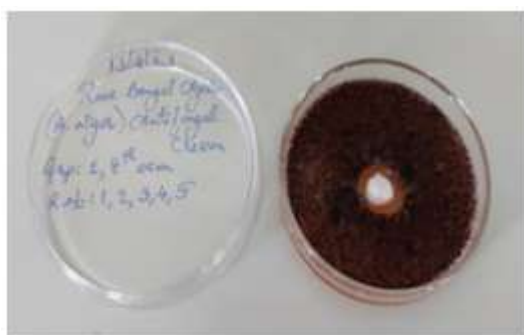


Fig 3: ZOI produced by Marketed formulation

### VI. DISCUSSION:-

Prepared formulation was evaluated for anti-fungal properties. The significant zone of inhibition was found. These were comparable with standard (Clotrimazole) zone of inhibition.

So the formulation which contains corn silk extract may inhibit the growth of fungi such as Aspergillus niger (Shown in figure no. 1, 2 and 3).

### VII. CONCLUSION:

The study provides useful information on anti-fungal activity of aqueous extract of Stigma maydisin controlling fungal infection. Hence, the study has high significance to cure skin infection caused by Aspergillusniger.

This attempt would provide significant encouragement for further research on Novel Drug development for treatment and prevention of skin fungal infection.

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